Germany
B1 Fire Rating

kraft paper products

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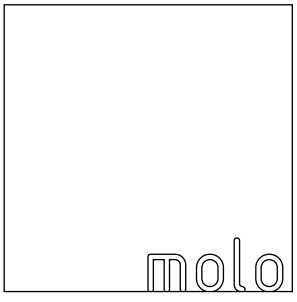

molo kraft paper products B1 fire rating – Germany

molo kraft paper products have achieved a German B1 fire rating and have have passed the North American standard NFPA 701 and French M1 rating. B1 (Brandschacht) is the main test method in Germany which measures reaction to fire and is considered the highest flammability standard in the country.

molo kraft paper products are completely fire retardant and are difficult to ignite / self-extinguishing.

This rating is consistent with use in all types of occupancies.

All products should always be kept away from any open flame or heat source to avoid possible damage.

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Testing. Advising. Assuring.

Test report
No. 2011-1478-1

issued 13.07.2011

Applicant: molo design. ltd.
1470 Venables Street

Vancouver, B.C. V5L 2G7

Date of order: **15.04.2011**
Date of sampling: **no official taking out of the sample from a representative of the Exova Warringtonfire, Frankfurt**
Date of arrival: **15.04. + 27.06.2011**
Date of test: **09.05. + 12.07.2011**

Order

Testing of the flammability (building class B1) according to DIN 4102-1 (May 1998)

Description / designation of the test object

Kraft softwall + softblock

Description of the relevant test procedure

DIN 4102 part 1 (May 1998)

This test report did not replace the required „Verwendbarkeitsnachweis“. It is only used for issuing the “Verwendbarkeitsnachweis”.

1. Description of the test material

1.1 Details of the customer:

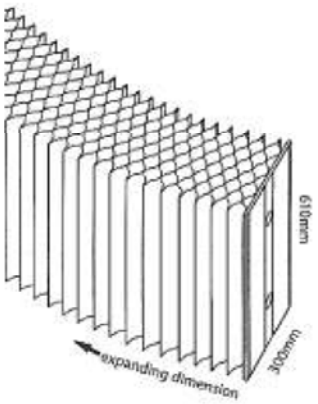
Kraft softwall + softblock – honeycomb structure made from laminated sheets oft Kraft paper (120 g/m2) with a salt – based fire retardant treatment applied

Intended end use of product:: expandable room partition

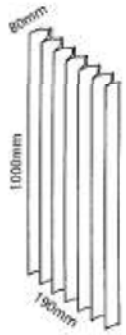
Construction:

"most opened" molo honeycomb

sample we sent



proposed sample for B1 testing



1.2 At the sample preparation of the Exova Warringtonfire, Frankfurt determined values:

Paper honeycomb construction

molo honeycomb open: 1 layer of the paper honeycomb flat pulled apart

molo honeycomb closed: Several paper honeycomb layers pushed together

	test sample:	thickness:	square weight:
samples A, C, D:	molo honeycomb open	0,2 – 0,4 mm	248 g/m²
sample B:	molo honeycomb closed	80 mm	54,2 Kg/m²

Testing after storing under climatic conditions (23°C / 50 % rel. humidity).

2. Test results

2.1 "Brandschacht" test according to DIN 4102-1

Sample A: molo honeycomb open (flat: one layer)
Sample B: molo honeycomb closed
Sample C: molo honeycomb open (flat: one layer)
Sample D: molo honeycomb open (flat: one layer)

Test results of the "Brandschacht" tests part 1						
line no.			measurements test sample			
			A	B	C	D
1	no. test arrangement according to DIN 4102 part 15, table 1		1	1	1	1
2	flame height max. over lower sample edge	cm	50	40	50	60
	time [1]	min : s	0:07	3:57	0:08	0:19
3	ascertainments on the front side Flaming/glowing time [1]	min : s	0:03	0:05	0:03	0:06
4	melting / burning through time [1]	min : s	0:11	not occured	0:10	0:08
5	ascertainments on the back side Flaming/glowing time [1]	min : s	not occured	not occured	not occured	not occured
6	discolouring time [1]	min : s	0:11	not occured	0:10	0:08
7	burning droplets begin [1]	min : s	not occured	not occured	not occured	not occured
8	extent occasional dripping of material					
9	constant dripping of material					
10	separating from burning sample parts begin [1]	min : s	not occured	not occured	not occured	not occured
11	occasional separating parts					
12	constant separating parts					
13	duration of burning on the sieve tray (max.)	min : s	not occured	not occured	not occured	not occured
14	influence on the burner flame by dripping of / separating material time [1]	min : s	no	no	no	no
15	earlier end of test end of the fire scenario on the sample [1]	min : s	no	no	no	no
16	time of a possible resulted test stop [1]	min : s				

[1] time from start of test

Test results of the "Brandschacht" tests part 2						
line no.			Measurements test sample			
			A	B	C	D
	flaming after end of test					
17	duration	min : s	not occured	not occured	not occured	not occured
18	number of sample		--/--	--/--	--/--	--/--
19	front side of sample		--/--	--/--	--/--	--/--
20	backside of sample		--/--	--/--	--/--	--/--
21	flame length	cm	--/--	--/--	--/--	--/--
	glowing after end of test					
22	duration	min . s	not occured	not occured	not occured	not occured
23	number of sample		--/--	--/--	--/--	--/--
	place of occurrence		--/--	--/--	--/--	--/--
24	lower sample part		--/--	--/--	--/--	--/--
25	upper sample part		--/--	--/--	--/--	--/--
26	front side of sample		--/--	--/--	--/--	--/--
27	backside of sample		--/--	--/--	--/--	--/--
	smoke density					
28	< 400 % x min		1	83	32	22
29	> 440 % x min		--/--	--/--	--/--	--/--
30	diagram in annex no.		1	1	1	1
	residual length					
31	single results	cm	42 / 38 34 / 32	47 / 46 45 / 45	55 / 40 43 / 43	49 / 46 38 / 39
32	average of the single results	cm	36	45	45	43
33	foto of the sample on page		5	5	5	5
	smoke temperature					
34	max. of the average results	°C	118	116	118	119
35	time [1)]	min : s	0:12	9:35	9:25	6:41
36	diagram in annex no.		1	2	3	4

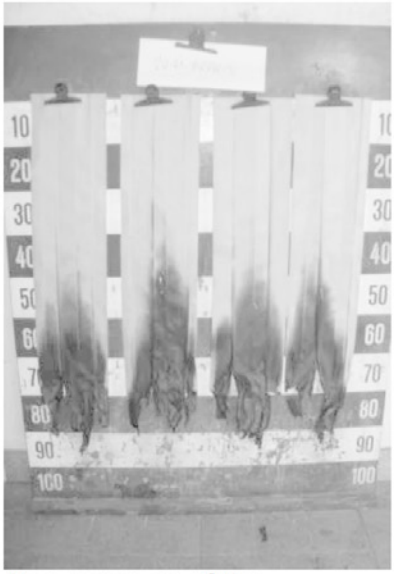
[1)] time from start of test

Remarks: none

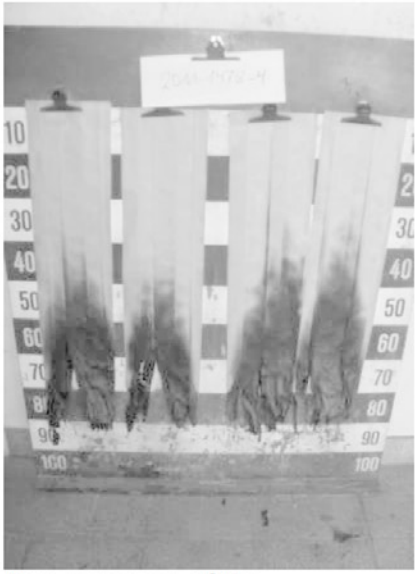
Appearance of the sample A
after the “Brandschacht” test

Appearance of the sample B
after the “Brandschacht” test

Appearance of the
sample B
after the “Brandschacht” tests



Appearance of the
sample C



Appearance of the
samble D

2.2 Normal flammabilty test according to DIN 4102-1

Test with edge ignition without deposit
Flame application on: lower sample edge

molo honeycomb open:

Sample-no. / Time from start of test	1	2	3	4	5
Ignition point [s]	1	1	1	1	1
Reaching the measuring mark within 20 seconds	no	no	no	no	no
Self extinguishing of the flame [s]	4	5	10	4	4
Max. flame height [mm]	40	40	50	30	30
Time [s]	4	5	10	4	4
End of afterflaming [s]	-	-	-	-	-
End of afterglowing [s]	-	-	-	-	-
Flames extinguished after [s]	-	-	-	-	-
Smoke development (visuell impression)	moderate smoke production				
Separating from burning material	no	no	no	no	no
Time [s]	-	-	-	-	-

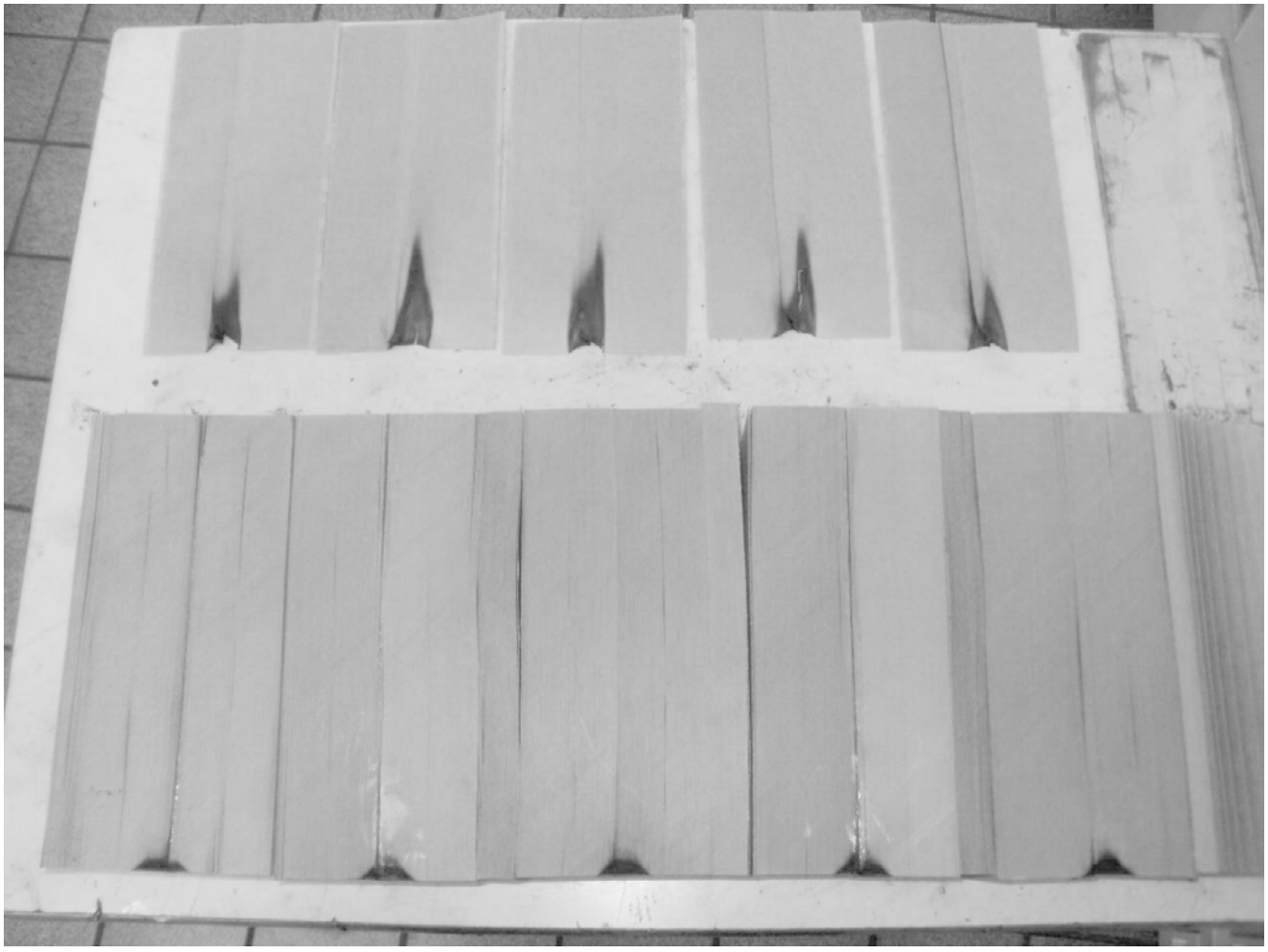
Remarks: none

molo honeycomb closed:

Sample-no. / Time from start of test	1	2	3	4	5
Ignition point [s]	1	1	1	1	1
Reaching the measuring mark within 20 seconds	no	no	no	no	no
Self extinguishing of the flame [s]	15	15	15	15	15
Max. flame height [mm]	10	10	10	10	10
Time [s]	15	15	15	15	15
End of afterflaming [s]	-	-	-	-	-
End of afterglowing [s]	-	-	-	-	-
Flames extinguished after [s]	-	-	-	-	-
Smoke development (visuell impression)	low smoke production				
Separating from burning material	no	no	no	no	no
Time [s]	-	-	-	-	-

Remarks: none

Appearance of the sample after the small burner test:



3. Assessment

The in chapter one described material, in the thicknesses of 0,3 and 80 mm, fulfils the requirements of the building class B2 according to DIN 4102-1 (Mai 1998).
The determined test results show that the material fulfils the requirements

of the building class B1

according to DIN 4102-1 (Mai 1998).

4. Special comment

The experiences of the test institute accordingly also between them lying thicknesses are enclosed in the test result.

The material wasn't tested after an outside storage.

In combination with other materials (for example coatings, deposits) the burning behaviour could be influenced unfavourable so that the classification above is not valid any longer. According to DIN 4102-1 the burning behaviour in combination with other materials has to be tested separately.

This test certificate did not replace the required „Verwendbarkeitsnachweis“. It is only used for issuing the “Verwendbarkeitsnachweis”.

This test report replaces the translation of the test report 2011-1478 from May 10th 2011 (date of signature) which is invalid from now on

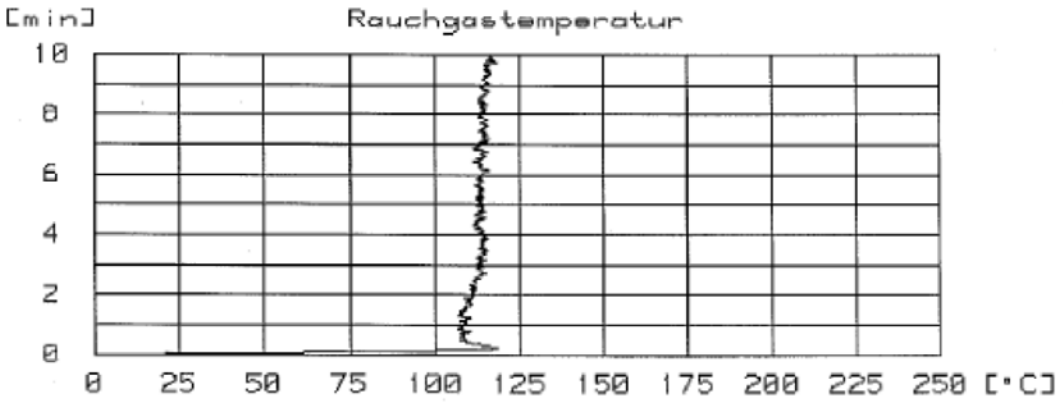
Frankfurt, 14th July 2011

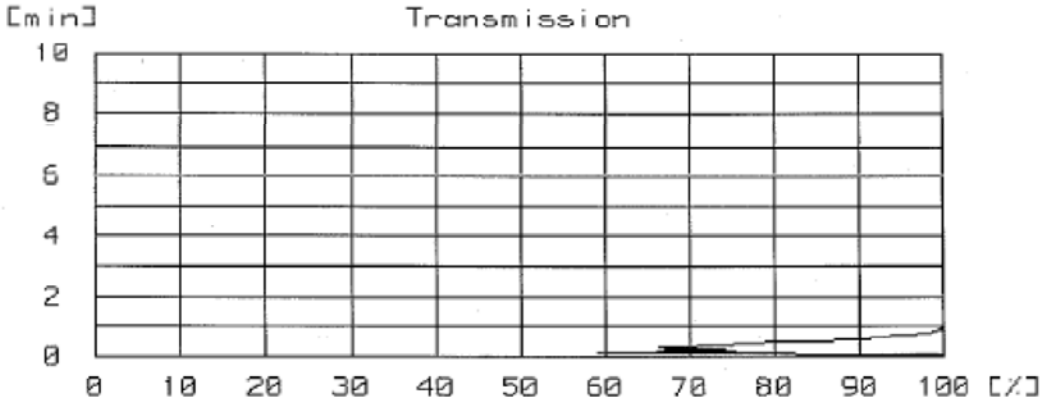
P. Scheinkönig
Tester in charge

Dipl.-Ing. T. Zachäus
laboratory supervisor

Annex 1 to the test report No. 2011-1478-1 issued 13.07.2011

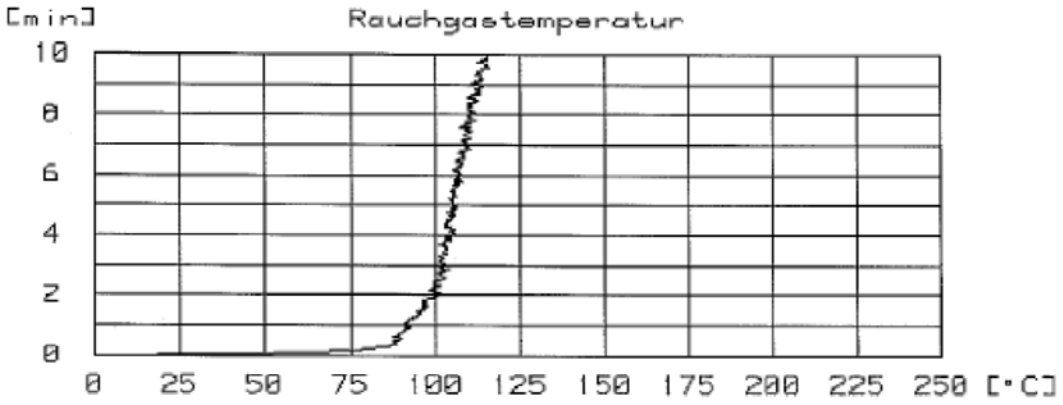
specimen A:

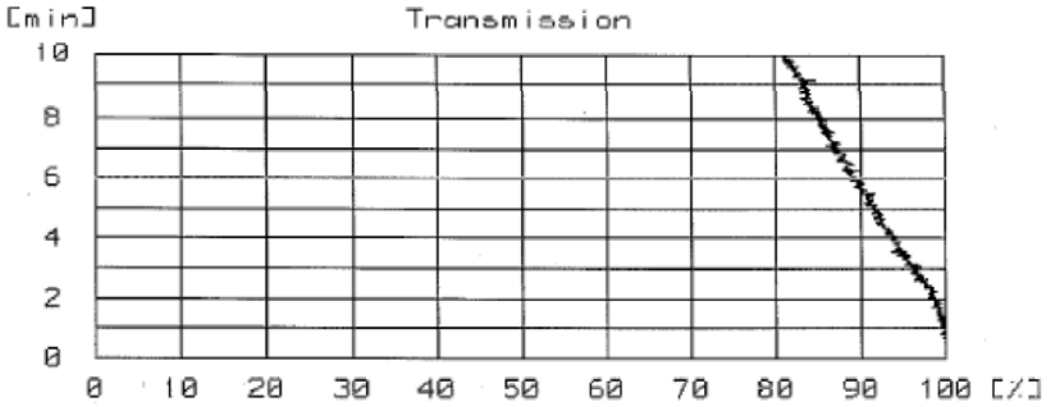




Annex 2 to the test report No. 2011-1478-1 issued 13.07.2011

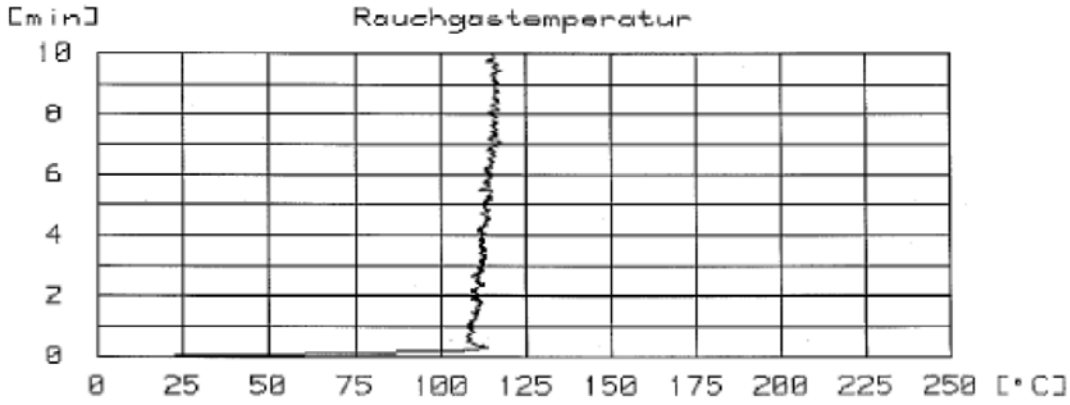
specimen B:

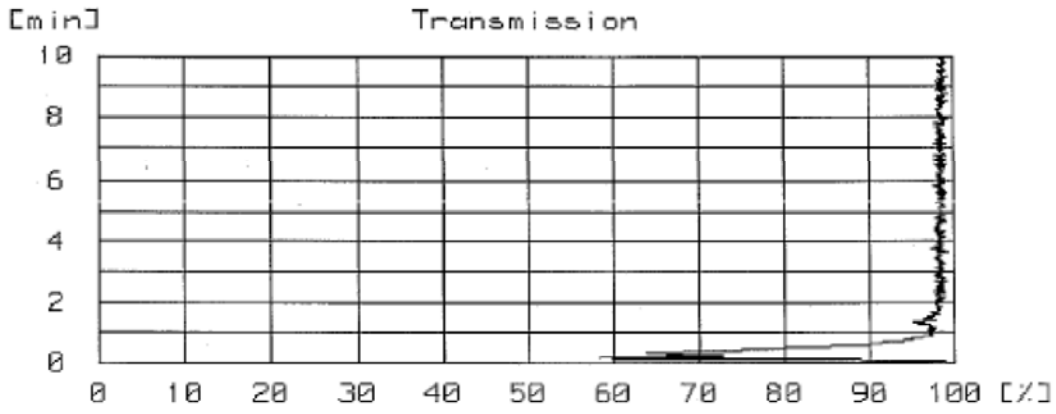




Annex 3 to the test report No. 2011-1478-1 issued 13.07.2011

specimen C:





Annex 4 to the test report No. 2011-1478-1 issued 13.07.2011

specimen D: